



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
REGION 10  
1200 Sixth Avenue  
Seattle, Washington 98101

October 1, 1997

Reply To  
Attn Of: ORC-158

Michael R. Thorp  
Heller, Erhman, White & McAuliffe  
6100 Columbia Center  
701 Fifth Avenue  
Seattle, WA 98104

Dear Mike:

Attached is one original copy of the Administrative Order on Consent (AOC) for the Gem Mine Portal in Canyon Creek. We have kept the other original for our files. The AOC was signed by EPA on September 30, 1997, and upon EPA's signature became effective. Accordingly, ASARCO, Incorporated must now comply with all schedules for work in the AOC, including the schedule provided in the Statement of Work.

Thank you, and thanks to Linda Larson and ASARCO, Incorporated, for the initiative and effort required to conclude this agreement and implement the wetlands treatment project. EPA looks forward to reviewing the results of this project, and to continuing cooperative efforts to address mining contamination in the Coeur d'Alene River Basin.

Sincerely,

A handwritten signature in dark ink, appearing to read "Clifford J. Villa".

Clifford J. Villa  
Assistant Regional Counsel

cc: Curt Fransen  
Chris Pfahl  
Earl Liverman

121999

USEPA SF



1092322



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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
REGION 10

IN THE MATTER OF:

Gem Mine Portal, Canyon Creek,  
Idaho

ASARCO Incorporated, a New Jersey  
corporation,

RESPONDENT.

Proceeding Under Sections 104,  
106(a), 120(e)(6), 122(a), and  
122(d)(3) of the Comprehensive  
Environmental Response,  
Compensation, and Liability Act,  
as amended 42 U.S.C. §§ 9604,  
9606(a), 9620(e)(6), 9622(a), and  
9622(d)(3).

U.S. EPA

Docket No.  
10-97-0172-CERCLA  
CERCLA

ADMINISTRATIVE ORDER ON CONSENT

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## I. INTRODUCTION

1.1 This Administrative Order on Consent ("Consent Order") is entered into voluntarily by the United States Environmental Protection Agency ("EPA") and ASARCO Incorporated ("Asarco" or "Respondent"). This Consent Order concerns response actions for the Gem Portal located on Canyon Creek at Gem, Shoshone County, Idaho. The site consists of an area related to the portal to the Gem Mine. It is located outside of the boundaries of the approximately 21 square mile Bunker Hill Superfund Site.

## II. JURISDICTION

2.1 This Consent Order is issued under the authority vested in the President of the United States by any or all of the following: Sections 104, 106(a), 120(e)(6), 122(a), and 122(d)(3) of the Comprehensive Environmental Response, Compensation, and Liability Act, as amended ("CERCLA"), 42 U.S.C. §§ 9604, 9606(a), 9620(e)(6), 9622(a), and 9622(d)(3). This authority was delegated to the Administrator of EPA on January 23, 1987, by Executive Order 12580, 52 Fed. Reg. 2926 (1987) and was further delegated to Regional Administrators on September 13, 1987, by EPA Delegation No. 14-14-C. The Regional Administrator for EPA Region 10

delegated this authority to the Director, Office of Environmental Cleanup.

2.2 Respondent agrees to undertake all actions required by this Consent Order. In any action by EPA or the United States to enforce the terms of this Consent Order, Respondent consents to the authority and jurisdiction of EPA to issue or enforce this Consent Order. Respondent and EPA agree not to contest the validity or terms of this Consent Order, or the procedures underlying or relating to it, in any action brought by the United States to enforce its terms.

### III. DEFINITIONS

3.1 Unless otherwise expressly provided herein, terms used in this Consent Order which are defined in CERCLA or in regulations promulgated under CERCLA shall have the meaning assigned to them in CERCLA or in such regulations. Whenever terms listed below are used in this Consent Order or in the appendices attached hereto and incorporated hereunder, the following definitions shall apply:

a. "Asarco" and "ASARCO Incorporated" mean the New Jersey corporation of that name.

b. "Consent Order" shall mean this Consent Order, the appendices attached to this Consent Order and all documents or modifications to documents incorporated into this Consent Order according to the procedures set forth herein.

c. "Day" shall mean a calendar day unless expressly stated to be a working day. "Working day" shall mean a day other than a Saturday, Sunday, or Federal holiday. In computing any period of time under this Consent Order, where the last day would fall on a Saturday, Sunday, or Federal holiday, the period shall run until the close of business of the next working day.

d. "EPA" shall mean the United States Environmental Protection Agency and any successor departments or agencies of the United States.

e. "Section" shall mean a portion of this Consent Order identified by a roman numeral.

f. "Site," for purposes of this Consent Order, shall mean the area depicted as within the "Project Boundary" on Figure 2-1 of the Statement of Work ("SOW"), located on Canyon Creek at Gem, Shoshone County, Idaho, and all suitable areas in very close proximity to the site that are necessary for implementation of the response actions.

g. "State" shall mean the State of Idaho.

h. "Work" shall mean all activities Asarco is required to perform under this Consent Order, except those required by Section XVI (Record Preservation).

#### IV. PARTIES BOUND

4.1 This Consent Order applies to and is binding upon EPA and upon the Respondent, its agents, successors, and assigns.

Respondent is responsible for carrying out all actions required of it by this Consent Order. The signatories hereto certify that they are authorized to execute and legally bind the parties they represent to this Consent Order. No change in the ownership or corporate status of the signatories shall alter their responsibilities under this Consent Order.

4.2 Respondent shall provide a copy of this Consent Order to any proposed owner or successor in interest before a controlling interest in Respondent is transferred. Respondent shall also provide a copy of this Consent Order to each contractor hired to perform any Work required under this Consent Order, and to each person representing it with respect to the Site or the Work. Respondent shall condition all contracts entered into for performance of the Work in conformity with the terms of this Consent Order. Respondent, or its contractors, shall provide written notice of the Consent Order to all subcontractors hired to perform any portion of the Work. Notwithstanding the terms of any contract, Respondent shall be responsible for ensuring that its subsidiaries, employees, contractors, subcontractors, consultants and agents comply with this Consent Order.

#### V. STATEMENT OF PURPOSE

5.1 Respondent has voluntarily undertaken the study of potential impacts to the environment due to water flowing from the Gen Portal to Canyon Creek, and has volunteered to take such

response actions as may be necessary as a result of such flow. In entering into this Consent Order, the objectives of EPA and the Respondent are: (a) to determine the nature and extent of any release and any threat to the public health, welfare or the environment caused by the release or threatened release of hazardous substances at or from the Site, to determine and evaluate alternatives for actions to prevent, mitigate or otherwise respond to any release or threatened release of hazardous substances at or from the Site by conducting an EE/CA; (b) to perform response actions determined to be reasonably necessary by EPA to mitigate a threat to public health, welfare, or the environment; and (c) to recover oversight costs incurred by EPA with respect to this Consent Order.

5.2 The parties do not intend this Consent Order to resolve any claims against Respondent for liability for damages for injury to, destruction of, or loss of natural resources at or related to the Site, or for the costs of assessing such damages.

5.3 The activities conducted by Respondent under this Consent Order are subject to approval by EPA and shall be conducted in accordance with the provisions of CERCLA, the National Oil and Hazardous Substance Pollution Contingency Plan (the "NCP"), 40 C.F.R. Part 300, and all applicable EPA guidances, policies and procedures. All activities conducted in compliance with this Consent Order shall be deemed to be in compliance with the NCP.



## VI. FINDINGS OF FACT

6.1 The Findings and Conclusions presented in this and the following Sections are made by EPA for purposes of establishing EPA's jurisdiction to enter into this Consent Order. By signing and taking actions under this Consent Order, Respondent does not agree with and reserves the right to controvert the following findings of fact in this Section and conclusions of law in Section VII below. Respondent does not admit any liability arising out of the transactions or occurrences alleged in this Consent Order, nor does Respondent acknowledge that any alleged release or threatened release of hazardous substance(s) at or from the Site constitutes an imminent or substantial endangerment to the public health or welfare or the environment. Such findings and conclusions shall not be admissible in evidence against the Respondent in any judicial or administrative proceeding other than a proceeding by the United States, including EPA, to enforce this Consent Order or any judgment enforcing it.

6.2 The Gem Portal is located on Canyon Creek approximately four miles upstream of the confluence of Canyon Creek and the South Fork of the Coeur d'Alene River. It is located on the south canyon hillside and drains a number of inactive mines in the area. It contributes approximately 26 lb/day total zinc to Canyon Creek.

6.3 The Gem Mine, along with the San Francisco and Black Bear Mines, were located in 1884 and combined in 1901 into a consolidated mine known as the Helena-Frisco. It was purchased in

1912 by Federal Mining and Smelting Company, an affiliate of Respondent, which operated it from 1912 to 1916 and again from 1942 to 1956. The surface rights to the area where the Gem Portal is located are currently owned by Hecla Mining Company.

6.4 The limited data which are available on the chemistry of water flowing from the Gem Portal may be characterized as showing moderate pH, positive alkalinity and moderate to low concentrations of iron and metals. Zinc is the primary metal present in the mine drainage.

6.5 The flow from the Gem Portal is an actual or potential source of hazardous substances that may adversely affect benthic organisms, fish and aquatic plant species in Canyon Creek and the South Fork of the Coeur d'Alene River.

## VII. CONCLUSIONS OF LAW

7.1 The Site is a facility as defined in Section 101(9) of CERCLA, 42 U.S.C. § 9601(9).

7.2 Substances found at the Site are "hazardous substances" as defined in Section 101(14) of CERCLA, 42 U.S.C. § 9601(14).

7.3 The presence of hazardous substances at the Site, or the past, present, or potential migration of hazardous substances currently located at or emanating from the Site, constitute actual and/or threatened "releases" into the environment, as defined in Section(s) 101 (8) and (22) of CERCLA, 42 U.S.C. § 9601(8) and (22).

7.4 Respondent is a "person", as defined in section 101(21) of CERCLA, 42 U.S.C. § 9601(21), and is a "potentially responsible party" within the meaning of Section 107 of CERCLA, 42 U.S.C. § 9607.

7.5 The conditions present at the Site constitute a threat to public health, welfare, or the environment based upon one or more of the factors set forth in Section 300.415(b)(2) of the NCP.

7.6 The actual or threatened release of hazardous substances from the Site may present an imminent and substantial endangerment to the public health, welfare, or the environment within the meaning of Section 106(a) of CERCLA, 42 U.S.C. § 9606(a).

7.7 The actions required by this Consent Order are: necessary to protect the public health or welfare or the environment and in the public interest, 42 U.S.C. § 9622(a); consistent with CERCLA and the NCP, 42 U.S.C. §§ 9604(a)(1) and 9622(a); and will expedite effective remedial action and minimize litigation, 42 U.S.C. § 9622(a).

#### VIII. NOTICE TO THE STATE

8.1 By providing it with a copy of this Consent Order, EPA is notifying the State of Idaho ("State") that this Consent Order is being issued and that EPA is the lead agency for coordinating, overseeing, and enforcing the response actions required by this Consent Order.

## IX. WORK TO BE PERFORMED

9.1 EPA has reviewed and approved the Statement of Work ("SOW") attached hereto as Appendix 1 and incorporated by this reference, and has found it to be consistent with the NCP and relevant EPA guidance documents. Respondent shall finance and perform the Work as set forth in the SOW.

9.2 All Work shall be under the direction and supervision of a qualified contractor. Before the Work is begun, Respondent shall notify EPA in writing of the identity and qualifications of the proposed contractors, subcontractors and laboratories to be used in carrying out the Work. The qualifications of such personnel shall be subject to EPA review, for verification and approval that they meet technical background and experience requirements. If EPA disapproves in writing of any person's technical qualifications, EPA shall notify Respondent of the reasons for the disapproval and Respondent shall notify EPA of the identity and qualifications of the replacement within 30 days of the written notice. During the course of the Work, Respondent shall notify EPA, in writing, of any changes or additions in the contractors used to carry out the Work and shall provide their names, titles and qualifications. EPA shall have the same right to approve such changes and additions as it has with respect to the original contractors proposed by Respondent.

9.3 Respondent shall conduct all activities for development of the Work listed in and according to the schedule set forth in

the SOW. All such work shall be conducted in accordance with CERCLA, the NCP, and applicable EPA guidances, including, but not limited to, the "Guidance on Conducting Nontime-critical Removal Actions Under CERCLA" (EPA Office of Emergency and Remedial Response, August 1993). The specific tasks, schedules, and list of deliverables that Respondent is required and has agreed to perform and provide are described more fully in the attached SOW. All Work performed pursuant to this Consent Order shall be in accordance with the schedules, standards, specifications, and other requirements of this Consent Order and the SOW, as initially approved by EPA, or as may be amended or modified by EPA from time to time following consultation with Respondent.

9.4 Unless otherwise specified, if EPA disapproves of or requires revisions to any deliverable, in whole or in part, Respondent shall amend and submit to EPA a revised deliverable which is responsive to all EPA's comments, within thirty (30) days of receiving EPA's comments, unless the EPA Project Coordinator determines additional testing or analysis is needed pursuant to Paragraph 10.1 herein, in which case Respondent shall amend and submit the revised deliverable within the period agreed to by the Project Coordinators.

9.5 EPA reserves the right to comment on, modify, and/or direct changes to be made by Respondent in all deliverables. At EPA's request, Respondent must fully correct all deficiencies and/or respond to all EPA's comments in subsequent or resubmitted deliverables.

9.6 Neither failure of EPA to expressly approve or disapprove Respondent's submissions within a specified time period(s), nor the absence of comments, shall be construed as approval of such submissions by EPA. EPA will provide written notice to the Project Coordinator when a deliverable is approved or disapproved. Pending approval or disapproval, Respondent shall proceed with all other tasks, deliverables and activities in accordance with the schedules set forth in the SOW or required by this Consent Order. EPA reserves the right to stop Respondent from proceeding further, either temporarily or permanently, on any task, activity, or deliverable set forth in the SOW or required by this Consent Order at any point during the Work for good cause.

9.7 Any hazardous waste transferred off-site under this Order must be taken to a facility acceptable under the Off-Site Rule at 40 C.F.R. § 300.440 and in accordance with Section 121(d)(3) of CERCLA, 42 U.S.C. § 9621(d)(3).

#### **X. MODIFICATION OF THE WORK AND APPROVED PLANS**

10.1 If at any time during the Work process, Respondent identifies a need for additional data beyond that required by this Consent Order or in the approved Plans, a memorandum documenting the need for such data shall be submitted to the EPA Project Coordinator. EPA, by its Project Coordinator, in its sole discretion, will determine whether such additional data are to be

incorporated into subsequent reports and deliverables required in the SOW.

10.2 In the event of conditions at the Site posing an immediate threat to human health or welfare or the environment, Respondent shall notify EPA and the State immediately upon becoming aware of such conditions. In the event of unanticipated or changed circumstances at the Site that may pose an immediate threat to human health, or welfare or the environment, Respondent shall notify the EPA Project Coordinator by telephone within twenty-four (24) hours of discovery of such circumstances. In addition to the authorities in the NCP, EPA may require Respondent to make appropriate responses to eliminate the immediate threat.

10.3 EPA may determine that in addition to tasks defined in the approved Plans (including any approved modification thereto), other work may be necessary to carry out the EE/CA and remedial action as set forth in the SOW. EPA may request that Respondent perform this additional work if EPA determines that such work is necessary for a complete EE/CA or to complete the remedial alternative selected in the action memorandum for the Site. Within fourteen (14) days of receipt of EPA's request, Respondent shall either confirm its willingness to perform the additional work, in writing, to EPA, or shall invoke dispute resolution pursuant to Section XVII of this Consent Order. If Respondent agrees to perform the additional work or if the dispute resolution process results in an adverse decision for the Respondent, Respondent shall implement the additional work according to the

standards, specifications and schedule set forth or approved by EPA in a written modification or supplement to the relevant Plan. In the event Respondent does not perform the additional work or such work is not completed to EPA's satisfaction, EPA may invoke any enforcement authority provided for in CERCLA, as described in Section XXIII. However, nothing in this Consent Order shall obligate the Respondent to undertake any work outside of the Site boundary without Respondent's consent. The withholding of consent by Respondent to the performance of work outside of the Site boundary shall not be subject to dispute resolution.

10.4 The following modifications or changes may be made by written agreement of the Project Coordinators: (1) technical field modifications to any Plan required under the SOW; (2) modifications to the schedules for deliverables in the SOW; and (3) any other change to the plans required in the SOW, not otherwise addressed in Paragraphs 9.2 and 9.3 above.

## **XI. QUALITY ASSURANCE**

11.1 Respondent shall assure that Work performed, samples taken and analyses conducted conform to the requirements of the SOW, and the quality assurance requirements in the approved Quality Assurance Plan. Respondent shall assure that field personnel used by it are properly trained in the use of field equipment and in chain-of-custody procedures.



## **XII. PROGRESS REPORTS, MEETINGS, AND COST UPDATES**

12.1 In addition to the deliverables set forth in this Consent Order, unless otherwise agreed by the Project Coordinators, Respondent shall provide monthly progress reports to EPA, by the tenth of each month. At a minimum, these progress reports shall: (1) describe the actions which have been taken to comply with this Consent Order during the preceding month; (2) include results of all sampling and tests performed by Respondent during the preceding month and; (3) describe work planned for the next two (2) months; and (4) describe all problems encountered and any anticipated problems, any actual or anticipated delays, as well as the solutions developed and/or implemented to address any actual or anticipated problems or delays.

12.2 Respondent shall participate in such meetings as EPA may schedule during the performance of the Work. Such meetings may include discussion of anticipated problems or new issues.

## **XIII. SAMPLING, ACCESS, AND DATA AVAILABILITY/ADMISSIBILITY**

13.1 All results of field sampling, tests, modeling, or other environmental data (including raw data) generated by Respondent during implementation of this Consent Order with regard to the Work shall be submitted to EPA in the progress reports described in the preceding Section of this Consent Order. EPA shall make available to the Respondent all results of field sampling, tests,

modeling, or other environmental data, (including raw data) generated by EPA or on behalf of EPA with regard to the Work during implementation of this Consent Order.

13.2 Respondent will verbally notify EPA at least fifteen (15) days prior to conducting field events described in the SOW or Sampling and Analysis Plan. At EPA's verbal or written request, or that of its authorized Representative(s), Respondent shall allow split or duplicate field samples to be taken by EPA or its authorized representatives of any field samples collected by Respondent in the course of implementing this Consent Order. All such split or duplicate field samples shall be analyzed by the quality assurance methods identified in the approved plan under the SOW.

13.3 EPA and its authorized representatives shall have the authority at all reasonable times to enter and freely move about the property at the Site and any off-Site areas where Work is being performed, to the extent access to such property is controlled by Respondent, for the purposes of inspecting conditions, activities, records, operating logs, and contracts related to the Site or Respondent and its contractor(s) pursuant to this Consent Order; reviewing the progress of Respondent in carrying out this Consent Order; conducting such tests as EPA deems necessary; and verifying the data submitted by Respondent. Respondent shall permit EPA and its authorized representatives to inspect and copy all non-privileged records, files, photographs, documents, sampling and monitoring data and other writings related

to work undertaken in carrying out this Consent Order. Nothing herein shall be construed to limit or affect EPA's right of entry or inspection authority under federal law.

13.4 Respondent may assert claims of business confidentiality covering part or all of the information submitted pursuant to the terms of this Consent Order subject to the provisions of 40 C.F.R. § 2.203, provided such claims are allowed by Section 104(e)(7) of CERCLA, 42 U.S.C. § 9604(e)(7). Such claim shall be asserted in the manner described by 40 C.F.R. § 2.203(b) and substantiated at the time the claim is made. Information determined to be confidential by EPA will be given the protection specified in 40 C.F.R. Part 2. If no such claim accompanies the information when it is submitted to EPA, it may be made available to the public by EPA without further notice to Respondent.

13.5 In entering into this Consent Order, Respondent and EPA waive any objections to the QA/QC Procedures applied to any data gathered, generated, or evaluated by EPA or Respondent in the performance or oversight of the Work that has been verified according to the Quality Assurance/Quality Control ("QA/QC") procedures required by the Consent Order or any EPA-approved Work Plan or Sampling and Analysis Plan. If Respondent objects to any data relating to the Work, it shall submit a report to EPA that identifies and explains its objections, describes the acceptable uses of the data, if any, and identifies any limitations to use of the data. The report must be submitted to EPA within thirty (30)

days of the monthly progress report or other deliverable containing the data.

13.6 Respondent agrees not to assert privilege or confidentiality claims with respect to any documents or data, concerning Site conditions, sampling or environmental monitoring required to be submitted to EPA pursuant to this Consent Order. Respondent, however, reserves the right to assert privilege and work product protection as to opinions and conclusions of their employees, consultants, attorneys or other agents. In the event privilege is asserted, upon request, Respondent shall provide EPA with the date, author, recipient or addressee, title or description of the subject of the opinion or conclusion and the privilege asserted by Respondent.

13.7 To the extent that the Site or any other property to which access is required for the implementation of this Consent Order is owned or controlled by persons other than Respondent, Respondent shall use its best efforts to obtain access for EPA, its contractors and oversight officials, and Respondent and its authorized representatives. Prior to initiation of field activities on any property, Respondent shall provide to EPA a copy of any additional access agreement(s) pertaining to such property. If access agreements are not obtained within a reasonable time, Respondent shall notify EPA of its failure to obtain access and provide EPA with a detailed description of its efforts to obtain access. EPA, in its discretion, may seek to obtain access for the Respondent; or may allow Respondent to continue work without

access. In the event EPA does not obtain access for Respondent, Respondent shall perform all other activities not requiring access to the property in question.

#### XIV. DESIGNATED PROJECT COORDINATORS

14.1 On or before the effective date of this Consent Order, EPA and Respondent shall each designate their own Project Coordinator. Each Project Coordinator shall be responsible for overseeing the implementation of this Consent Order. To the maximum extent possible, communications between Respondent and EPA shall be directed to the Project Coordinator by facsimile or e-mail, with copies to such other persons as EPA and Respondent may respectively designate. Communications include, but are not limited to, all reports, approvals and other documents and correspondence submitted under this Consent Order.

14.2 EPA and Respondent have the right to change their respective Project Coordinator. The other party must be notified, in writing, at least ten (10) days prior to the change.

14.3 All reports, approvals, disapprovals and other documents and correspondence which must be submitted under this Consent Order shall be sent by hand, express or certified mail, return receipt requested, to the following Project Coordinators or to such successor Project Coordinators as may be designated in writing by the parties:

- (a) For EPA:  
Earl Liverman  
U.S. EPA, Region 10  
2110 Ironwood Parkway  
Coeur d'Alene, Idaho 83814  
(208) 664-4858
- (b) For Respondent:  
J. Chris Pfahl  
ASARCO Incorporated  
(mailing address:)  
P.O. Box 440  
Wallace, Idaho 83873  
(street address:)  
59148 Silver Valley Road  
Osborne, Idaho 83849  
(208) 752-1116

14.4 EPA's Project Coordinator shall have the authority vested in a Remedial Project Manager ("RPM") and On-Scene Coordinator ("OSC") by the NCP. In addition, EPA's Project Coordinator shall have the authority, consistent with the NCP, to halt any work required by this Consent Order, and to take any necessary response action when he/she determines that emergency conditions at the Site may present an immediate endangerment to public health, welfare, or the environment.

14.5 In addition to its Project Coordinator, EPA shall arrange for other qualified person(s) to assist in its oversight and review of the conduct of the Work, pursuant to Section 104(a) of CERCLA, 42 U.S.C. 5 9604(a). Such persons may observe work and make inquiries in the absence of the EPA Project Coordinator, but are not authorized to modify the SOW.

**XV. OTHER APPLICABLE LAWS**

15.1 Respondent shall comply with all applicable state, federal and local laws when performing the Work. No local, state, or federal permit shall be required for any portion of any activity conducted entirely on-site, where such action is selected and carried out in compliance with Section 121 of CERCLA, 42 U.S.C. § 9621.

**XVI. RECORD PRESERVATION**

16.1 All records and documents created by Respondent or on Respondent's behalf, which directly relate to the implementation of this Order, shall be preserved by Respondent for a minimum of ten (10) years after completion of any remedial action as documented by receipt of EPA's Certificate of Completion of the Work. After this ten (10) year period, Respondent shall notify EPA at least ninety (90) days before the documents are scheduled to be destroyed. If EPA requests that the documents be saved, Respondent shall, at no cost to EPA and subject to Paragraphs 13.4 and 13.6 of this Consent Order, give EPA the documents or copies of the documents.

## XVII. DISPUTE RESOLUTION

17.1 The dispute resolution procedures of this Section shall be the exclusive mechanism to resolve disputes arising under or with respect to this Consent Order and shall apply to all provisions of this Consent Order. The fact that dispute resolution is not specifically referenced in the individual Sections of the Consent Order is not intended to and shall not bar Respondent from invoking the procedures with respect to any disputed issue.

17.2 a. Any dispute which arises under or with respect to this Consent Order shall in the first instance be the subject of informal negotiations between the Respondent and EPA. The period for informal negotiations shall not exceed fifteen (15) days from the time the dispute arises, unless such period is modified by written agreement of the Project Coordinators. The dispute shall be considered to have arisen when one party sends the other parties a written Notice of Dispute. Informal negotiations shall immediately commence. The written Notice of Dispute shall be transmitted to the other party within 15 days of the time that the dispute arises, or the right to informal or formal dispute resolution shall be considered waived. In the event that the parties cannot resolve a dispute informally, the position advanced by EPA shall be binding unless formal dispute resolution is invoked under Paragraph 17.2(b).



b. Within twenty (20) days after the conclusion of the informal negotiation period, Respondent may request a determination by EPA's Director, Office of Environmental Cleanup, Region X, by submitting to EPA a written Statement of Position on the matter in dispute, including, but not limited to, any factual data, analysis or opinion supporting that position and any supporting documentation relied upon by the Respondent.

c. Within twenty (20) days after receipt of Respondent's Statement of Position, the EPA will provide to Respondent its Statement of Position, including, but not limited to, any factual data, analysis, or opinion supporting that position and all supporting documentation relied upon by the EPA.

d. An administrative record of the dispute shall be maintained by EPA and shall contain all Statements of Position, including supporting documentation, submitted pursuant to this Section. Where appropriate, the EPA may allow submission of supplemental Statements of Position by the parties to the dispute.

e. The Director will issue a final administrative decision resolving the dispute, based on the administrative record described in subparagraph d. This decision shall be binding upon the Respondent subject to the provision for judicial review provided in Paragraph 17.3.

17.3 If the Respondent does not abide by EPA's final administrative decision, EPA reserves the right in its sole discretion to seek either stipulated or statutory penalties and/or to pursue any other enforcement option provided in CERCLA. If EPA

seeks enforcement of this Consent Order or pursues any other enforcement option in court, Respondent may seek judicial review of EPA's final administrative decision based on the administrative record developed during the dispute resolution process. Such judicial review of the dispute shall be under the arbitrary and capricious standard.

17.4 While a matter is pending in dispute resolution, Respondent is not relieved of its obligations to perform other activities and submit deliverables. The invocation of dispute resolution does not stay the accrual of stipulated or statutory penalties under this Consent Order.

#### **XVIII. STIPULATED PENALTIES**

18.1 EPA, in its sole discretion, may impose stipulated penalties for each day that Respondent fails to complete a requirement of this Consent Order in a timely manner. Penalties begin to accrue on the day that performance is due or a violation occurs and shall extend through the date of completion of the correction. Where a revised submission is required of Respondent, stipulated penalties shall continue to accrue until a satisfactory deliverable is submitted to EPA. EPA will provide written notice for violations that are not based on timeliness; nevertheless, penalties shall accrue from the day a violation commences. Payment shall be due within thirty (30) days of receipt of a demand letter from EPA. EPA may, in its sole discretion, waive

imposition of stipulated penalties if it determines that Respondent has attempted in good faith to comply with this Order or in the event of timely cure of defects in initial submissions.

18.2 Respondent shall pay interest on any unpaid balance of stipulated penalties, which shall begin to accrue at the end of the 30-day period, at the rate established by the Department of Treasury pursuant to 31 U.S.C. § 3717.

18.3 Respondent shall make all payments on account of stipulated penalties by cashier's or certified check(s) made payable to the Hazardous Substances Superfund, which are to be transmitted to:

U.S. Environmental Protection Agency  
Attn: Superfund Accounting  
P.O. Box 360903M  
Pittsburgh, PA 15251

All checks shall identify the name of the Site, and the Site identification number 103K. Stipulated penalties may also be paid by wire transfer in accordance with instructions received from Mellon Bank. A copy of the check, transmittal letter, or wire transfer shall be forwarded to the EPA Project Coordinator.

18.4 For the following major deliverables, stipulated penalties shall accrue in the amount of \$1,000 per day, per violation, for the first fourteen (14) days of noncompliance; \$5,000 per day, per violation, for the 15th through 30th day of noncompliance; \$10,000 per day, per violation, after the 30th day of noncompliance.

- 1) Sampling and Analysis Plan (SAP)
- 2) Engineering Evaluation/Cost Analysis (EE/CA)

- 3) Remedial Design/Remedial Action (RD/RA) Work Plan
- 4) Final Construction Completion Report

18.5 Respondent shall not dispute the accrual rate for stipulated penalties assessed under this Section. Respondent may dispute whether the violation did in fact occur; the number of days of such violation; and whether such violation should be excused on the basis of Force Majeure. Penalties shall accrue, but need not be paid, during the dispute resolution period. If Respondent does not prevail upon resolution of the dispute, all penalties shall be due to EPA within thirty (30) days of resolution of the dispute. If Respondent prevails in the dispute resolution, no penalties shall be paid.

18.6 The stipulated penalties provisions in this Section do not preclude EPA from pursuing any other remedies or sanctions, including applicable statutory penalties instead of stipulated penalties, which are available because of Respondent's failure to comply with this Consent Order. Payment of stipulated penalties does not alter Respondent's obligation to complete performance under this Consent Order.

#### **XIX. FORCE MAJEURE**

19.1 For purposes of this Consent Order, "Force Majeure" is defined as any event arising from causes beyond the control of Respondent or of any entity controlled by Respondent, including its contractors and subcontractors, that delays the timely

performance of any obligation under this Consent Order, notwithstanding Respondent's best efforts to avoid delay. The requirement that Respondent exercise "best efforts" to avoid the delay includes using best efforts to anticipate any potential Force Majeure event and to address the effects of any potential Force Majeure event: (1) as it is occurring; and (2) following the potential Force Majeure event, such that the delay is minimized to the greatest extent practicable. Force Majeure events shall not include increased costs or expenses of any Work to be performed under this Consent Order or the financial difficulty of Respondent in performing such work.

19.2 If any event occurs or has occurred that may delay the performance of any obligation under this Consent Order, whether or not caused by a Force Majeure event, Respondent shall notify the EPA Project Coordinator (or, in his or her absence, the Director of the Office of Environmental Cleanup, EPA, Region 10) by telephone, within forty-eight (48) hours after Respondent first became aware that the event might cause a delay. Within five (5) business days thereafter, Respondent shall provide a written statement of the reasons for the delay; the anticipated duration of the delay; all actions taken or to be taken to prevent or minimize the delay; and a schedule for implementation of any measures to be taken to mitigate the effect of the delay. Respondent shall exercise best efforts to avoid or minimize any delay and the effects of such delay. Failure to comply with the

above requirements as to any event shall preclude Respondent from asserting any claim of Force Majeure as to that event.

19.3 If EPA agrees that the delay or anticipated delay is attributable to a Force Majeure event, the time for performance of the obligations under this Consent Order that are directly affected by the Force Majeure event shall be extended for a period of time not to exceed the actual duration of the delay caused by the Force Majeure event. An extension of the time for performance of the obligation directly affected by the Force Majeure event shall not, of itself, extend the time for performance of any subsequent obligation.

19.4 If EPA does not agree that the delay or anticipated delay has been or will be caused by a Force Majeure event, or does not agree with Respondent on the length of the proposed extension of time, the issue shall be subject to the dispute resolution procedures set forth in Section XVII of this Consent Order. In any such proceeding, Respondent shall have the burden of demonstrating by a preponderance of the evidence that the delay or anticipated delay has been or will be caused by a Force Majeure event, that the duration of the delay was or will be warranted under the circumstances, that Respondent exercised or is using best efforts to avoid and/or mitigate the effects of the delay, and that Respondent complied with the requirements of Paragraph 19.1.

19.5 Should Respondent carry the burden set forth in the preceding paragraph, the delay at issue shall not be deemed to be a violation of the affected obligation of this Consent Order.

**XX. REIMBURSEMENT OF RESPONSE AND OVERSIGHT COSTS**

20.1 EPA will submit to Respondent on a periodic basis a summary and demand for payment of all response costs incurred by EPA with respect to the Work and this Consent Order ("Response Costs"). Response costs shall include all costs, including, but not limited to, direct and indirect costs that EPA incurs in overseeing Respondent's implementation of this Consent Order and in performance by EPA of activities required as part of the Work under this Consent Order. All cost summaries will include EPA'S: (a) payroll and travel costs, (b) contract costs, (c) indirect costs, including the amount computed on the basis of direct labor hours. EPA's certified Financial Management System summary of unreimbursed response costs shall serve as the basis for each demand for payment.

20.2 Subject to requests for supporting documentation under Paragraph 20.4, within thirty (30) days of receipt of demand for payment, the amount shall be due and payable and Respondent shall remit a certified or cashier's check for the amount of such costs. Respondent may also pay by wire transfer pursuant to instructions received from Mellon Bank. If the amount of any demand is not paid in full within thirty (30) days of receipt of the demand,

interest shall accrue on the unpaid balance at the interest rate determined annually by the Secretary of the Treasury for interest on investments of the Hazardous Substances Superfund, pursuant to Section 107(a) of CERCLA, 42 U.S.C. § 9607(a), calculated from the date of receipt of the demand.

20.3 All checks or wire transfers shall be made payable to the Hazardous Substances Superfund and shall include the name of the Site, the Site identification number 103K, and shall indicate that payment is on account of EPA response costs. Checks shall be forwarded to:

Mellon Bank  
U.S. Environmental Protection Agency Region 10  
Attn: Superfund Accounting  
P.O. Box 360903M  
Pittsburgh, PA 15251

Wire transfers must be made in accordance with Mellon Bank's instructions. Copies of each transmittal letter and check or wire transfer shall be sent simultaneously to the EPA Project Coordinator.

20.4 Upon request by the Respondent within thirty (30) days of receipt of the demand for payment, EPA shall provide the following supporting documentation for Response costs: employee time sheets for payroll costs, receipts for travel costs, contractor invoices and supporting documentation for contractor charges and expenses, and computation of EPA indirect costs. Some of the requested information may be redacted or issued only after Respondent agrees to protective provisions if the information is



subject to a claim of privilege or is confidential business information.

20.5 Respondent may dispute payment of any portion of the Response costs demanded by EPA, but only on the basis of accounting errors, the inclusion of costs outside the scope of this Consent Order, costs inconsistent with the NCP, or not in accordance with CERCLA. Any such objection shall be made in writing within thirty (30) days of receipt of the requested supporting documentation and shall specifically identify the disputed costs and the basis of the dispute. Any non-contested costs shall be remitted by Respondent within the thirty (30) day notice period and in accordance with the procedures in Paragraphs 20.2 and 20.3 above. In the event that dispute resolution under Section XVII above is invoked with respect to any cost item, Respondent shall pay disputed costs into an escrow account while the dispute is pending, and provide to EPA a copy of the correspondence with the bank that establishes the escrow account. In any dispute resolution proceedings, Respondent shall bear the burden of establishing its contentions of inappropriate costs on the grounds set forth above.

## **XXI. INSURANCE AND INDEMNIFICATION**

21.1 a. Prior to commencing any Work under this Consent Order, Respondent shall obtain comprehensive general liability ("CGL") and automobile insurance. The CGL insurance shall have an

annual aggregate limit of not less than two (2) million dollars, naming the United States as additional insured, to insure against all claims of injury or property damage to third parties arising from or related to such Work. Respondent shall maintain automobile liability insurance as follows: bodily injury liability \$500,000 each person; one million dollars each occurrence; property damage liability \$500,000 each occurrence. Such insurance shall be maintained for the duration of this Consent Order and for two years after completion of all Work required hereunder. In lieu of such coverage, Respondent, at its option, may provide evidence of financial capacity sufficient for purposes of self-insurance pursuant to the requirements in 40 C.F.R. Part 265, Subpart H.

b. Respondent may demonstrate by evidence satisfactory to EPA that its contractor or subcontractors maintain equivalent coverage, or coverage for the same risks but in a lesser amount or for lesser terms, in which case Respondent needs to provide only that portion of the insurance described above which is not maintained by the contractor or subcontractor. At least seven (7) days prior to commencing any field work under this Consent Order, Respondent shall provide EPA with copies of the applicable policies or other evidence of the required coverage.

c. For the duration of this Consent Order, Respondent shall satisfy, or ensure that its contractors or subcontractors satisfy, all applicable laws and regulations regarding workers compensation coverage for all persons performing field work on

their behalf in implementing this Consent Order. Prior to commencing such work, Respondent shall provide EPA with copies of the applicable policies or other evidence of such coverage.

21.2 Respondent agrees to indemnify and hold the United States, its agencies, departments, agents and employees, harmless from any and all claims or causes of action arising from or on account of acts or omissions of Respondent, its employees, contractors, agents, receivers, successors, or assigns in carrying out activities under this Consent Order. The United States or any agency or authorized representative thereof shall not be held out as a party to any contract entered into by Respondent in carrying out activities under this Consent Order.

## XXII. JUDICIAL REVIEW

22.1 Nothing in this Consent Order shall be construed as authorizing any person to seek judicial review of any action or work where review is barred by any provision of CERCLA, including, without limitation, Section 113(h) of CERCLA, 42 U.S.C. § 9613(h).

## XXIII. RESERVATIONS OF RIGHTS

23.1 EPA reserves the right to bring an action against Respondent under Section 107 of CERCLA, 42 U.S.C. § 9607, for recovery of any costs incurred in the event that EPA performs any Work required by this Consent Order and any future costs incurred

by the United States in connection with response activities conducted under CERCLA at this Site that are beyond the scope of the Work under this Consent Order.

23.2 EPA reserves the right to bring an action against Respondent to collect stipulated penalties assessed pursuant to Section XVIII of this Consent Order, or to elect to seek penalties pursuant to Section 109 of CERCLA, 42 U.S.C. § 9609.

23.3 Respondent retains its right to assert any claims for contribution or otherwise that it may have against other potentially responsible parties at the Site.

23.4 Except as expressly provided in this Consent Order, each party reserves all other rights and defenses it may have. Nothing in this Consent Order shall affect EPA's emergency removal authority or its enforcement authorities including, but not limited to, the right to seek injunctive relief, stipulated or statutory penalties, and/or punitive damages.

23.5 Upon satisfactory completion of the requirements of this Consent Order, Respondent shall have resolved its liability to EPA for the Work performed, Past Costs and the Response Costs incurred in connection with the Work. Respondent is not released from liability, however, for (1) any response actions taken at the Site beyond the scope of this Consent Order including removals, remedial action or activities under section 121(c) of CERCLA, 42 U.S.C. § 9621(c) or (2) natural resource damages in accordance with CERCLA.

23.6 The parties agree that Respondent is entitled, as of the effective date of this Consent Order, to protection from contribution actions or claims as provided by CERCLA, Section 113(f)(2), 42 USC § 9613 (f)(2) for work performed in accordance with this Consent Order.

#### XXIV. OTHER CLAIMS

24.1 In entering into this Consent Order, Respondent waives any right to seek reimbursement under Section 106(b) of CERCLA, 42 U.S.C. § 9606(b) and any right to present claims under Sections 111 or 112 of CERCLA, 42 U.S.C. §§ 9611 or 9612 for the Work. This Consent Order does not constitute any decision on preauthorization of funds under Section 111(a)(2) of CERCLA, 42 U.S.C. § 9611(a)(2).

24.2 a. Respondent reserves, and this Consent Order is without prejudice to, CERCLA claims in contribution and (if permitted by applicable law) response cost recovery against the United States, including any department, agency or instrumentality of the United States, for response costs that Asarco has incurred or will incur at the Site. The United States does not waive, but reserves, for itself and all of its departments, agencies or instrumentalities, any and all defenses that it may have to Respondent's reserved claims, whether substantive, procedural, jurisdictional, or other. Additionally, this Paragraph shall not be construed as notice to the United States of such claims.

b. Nothing in this Consent Order shall be deemed to constitute preauthorization of a claim within the meaning of Section 111 of CERCLA, 42 U.S.C. § 9611, or 40 C.F.R. § 300.700(d).

24.3 Nothing in this Consent Order shall constitute or be construed as a release from any claim, cause of action, or demand in law or equity against any person, or entity not a signatory to this Consent Order for any liability it may have arising out of or relating in any way to the generation, storage, treatment, handling, transportation, release, or disposal of any hazardous substances, pollutants, or contaminants found at, taken to or from the Site.

**XXV. EFFECTIVE DATE AND SUBSEQUENT MODIFICATION**

25.1 The effective date of this Consent Order shall be the date it is signed by EPA.

25.2 This Consent Order may be amended by mutual agreement of EPA and Respondent. All such amendments shall be in writing and shall be effective when signed by all parties to this Consent Order. EPA Project Coordinators are not authorized to sign amendments to the Consent Order.

25.3 No informal advice, guidance, suggestions or comments by EPA regarding reports, plans, specifications, schedules or any other document submitted by Respondent shall be construed as

relieving Respondent of its obligation to obtain such formal approval as may be required by this Consent Order.

#### XXVI. SATISFACTION

26.1 The provisions of this Consent Order shall be satisfied when Respondent certifies in writing to EPA that all activities required under this Consent Order, including any additional work and any stipulated penalties demanded by EPA, have been completed and/or paid, and EPA has approved the certification. EPA will respond within thirty (30) days to any such request for approval of Respondent's certification or within a longer period of time as may be agreed to by the Project Coordinators. If the EPA does not respond within thirty days after receipt of Respondent's request or within the agreed on time, or responds unfavorably, Respondent may invoke dispute resolution under Section XVII. Such certification and approval shall not, however, terminate Respondent's obligation to comply with Sections XVI and XXI of this Consent Order.

26.2 The certification required in the preceding paragraph shall be signed by a responsible official representing Respondent, who shall certify that the information contained in or accompanying the certification is true, accurate, and complete. For purposes of this Consent Order, a responsible official is a corporate official in charge of a principal business function.

XXVII. SEPARATE DOCUMENTS

27.1 This Consent Order may be executed in two or more counterparts, each of which shall be deemed an original, but all of which together shall constitute one and the same instrument.

By: \_\_\_\_\_



U.S. Environmental Protection  
Agency, Region 10  
1200 Sixth Avenue  
Seattle, WA 98104

Date: \_\_\_\_\_

Sept. 30, 1997



STIPULATED, AGREED, AND APPROVED FOR ISSUANCE

ASARCO Incorporated

By: Augustus Kinsolving

Date: September 12, 1997

Vice President

Title

180 Maiden Lane

New York, New York 10038

Address

J:\PMG\110\GEM.ORD

**GEM PORTAL DRAINAGE  
STATEMENT OF WORK**

**August 5, 1997**

**Prepared for:**

**ASARCO Incorporated  
Box 440  
Wallace, Idaho 83873**

**Prepared by:**

**MCCULLEY, FRICK & GILMAN, INC.**  
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**215 S. Third Street W.  
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(406) 728-4600  
FAX 728-4698**

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## 1.0 INTRODUCTION

The following Statement of Work (SOW) outlines the approach for evaluation of the Gem Portal drainage in Shoshone County, Idaho. This SOW was prepared in connection with an Administrative Order on Consent (AOC) between the U.S. Environmental Protection Agency (EPA) and ASARCO Incorporated (Asarco).

The purpose of this SOW is to describe, in general terms, the investigation, analysis, and evaluation that will be performed to support the identification and selection of a remedial action alternative to be implemented to address the Gem Portal drainage. This document is intended to provide general information for planning purposes only. This SOW will be followed, as appropriate, by an Engineering Evaluation/Cost Analysis (EE/CA) Report, an Action Memorandum to be prepared by EPA, and detailed engineering design documents for the selected remedy. The final approach for remediation of the Gem Portal drainage will be established following the public comment period for the EE/CA Report.

### 1.1 BACKGROUND INFORMATION

The Gem Portal is situated on Hecla Mining Company property within the Canyon Creek drainage at Gem, Idaho. Canyon Creek is a tributary of the South Fork of the Coeur d'Alene River. The underground mine workings drained by the portal are part of the Helena-Frisco and Black Bear Mines which are owned by Asarco. Water from the closed portal presently enters Canyon Creek. Available data indicate that the Gem Portal water has moderate pH, positive alkalinity, and detectable concentrations of dissolved metals.

## 1.2 REMEDIAL ACTION OBJECTIVE

The remedial action objective is to reduce the dispersal of pollutants from the Gem Portal into Canyon Creek in order to protect human health and the environment. A secondary objective is to allow for flexibility in the remedial approach such that flows from other sources in the Canyon Creek drainage unrelated to the Gem Portal could also be addressed either in conjunction with or later in coordination with the project.

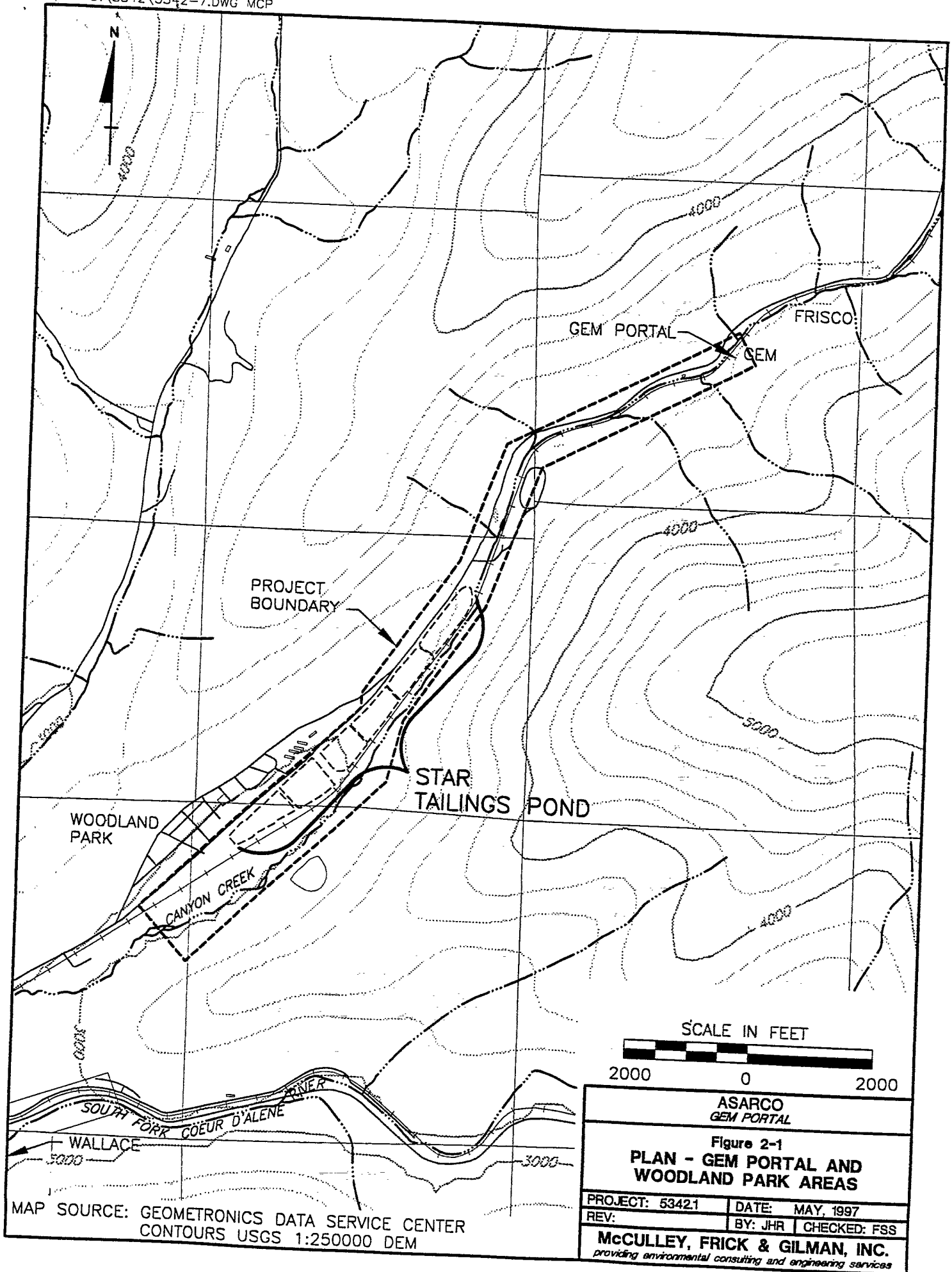
## 2.0 SITE DESCRIPTION

This section presents a brief physical description of the Gem Portal area. A description of flow rates and water quality for the Gem Portal drainage is also included.

### 2.1 SITE PHYSICAL CHARACTERISTICS

As previously noted, the Gem Portal is located along Canyon Creek at Gem, Idaho (Figure 2-1). It is located on Hecla Mining Company property approximately two miles upstream of the Star tailings ponds (also owned by Hecla) and approximately two and one-half miles above the flats at Woodland Park. The project boundary encompasses the Gem Portal area, a narrow corridor extending to the southwest from the Gem Portal, the Star tailings ponds, and a portion of Woodland Park. These areas are included within the project boundary so that sufficient space is available to construct treatment works to address the Gem Portal drainage, if deemed appropriate through the EE/CA process.

Elevations within the 3,000-foot-long reach of Canyon Creek near the Gem Portal range from approximately 3,140 feet above mean sea level (AMSL) at the upstream portion to 3,064 feet AMSL at the downstream portion with an average gradient approximately 2.5 percent. Available meteorological data from the Wallace/Woodland Park area show the 30-year annual precipitation from 1931 to 1955 to be 35.4 inches/yr (Trustees, 1995). The average annual precipitation from 1961 to 1990 is 39.2 inches/yr. Typically, January exhibited the largest amount of precipitation and July displayed the lowest amount of precipitation. Typical pan evaporation within the Canyon Creek drainage between May and October is approximately 25 to 30 inches (Trustees, 1995). The annual free-water surface evaporation is approximately 30 inches (NOAA, 1982). Native vegetation within the Canyon Creek valley consists of white pine, ponderosa pine, cedar, spruce, Douglas fir, tamarack, cottonwoods and alders. Geologically, the Canyon Creek valley is partially filled with Recent to Pleistocene alluvial deposits overlying Precambrian rocks of the Belt Supergroup (Hobbs et al, 1965).





## 2.2 PORTAL WATER CHEMISTRY AND LOADINGS

Waters from the Gem Portal currently flow in a buried 12-inch-diameter pipe extending from a collection structure within the closed adit approximately 200 feet to Canyon Creek. A continuously recording flow meter was installed in this pipe in late May 1997. Data collected from the flow meter indicates spring time flow rates on the order of approximately 400 to 500 gallons per minute (gpm). These flow rates likely reflect high-flow conditions in response to rainfall and snowmelt infiltrating to the underground mine workings. As such, it is expected that the flow rates will decrease through the summer and fall prior to peaking again in the spring. Previous estimates of flow rates were lower, ranging from 80 to 120 gpm. Continuous monitoring of the flow rate will be used to assess the seasonal variability of flow rates from the Gem Portal.

Limited data on the Gem Portal water chemistry are available (Table 2-1). The water chemistry may be characterized as having moderate pH (range 6.2 - 7.0), positive alkalinity, and detectable concentrations of dissolved metals. Zinc is the primary metal present in the Gem Portal drainage (range 13.6 mg/L to 17.2 mg/L). Metal concentrations in waters draining from the Gem Portal are lower than those commonly observed in drainage from other mined areas. This may be due to the moderate pH of the water which limits metal solubility. The moderate pH of the drainage may be related to the presence of carbonate-bearing minerals in the mine workings drained by the Gem Portal.

Table 2-1 Historical Gem Portal Water Quality Data

Analyte	Concentration (mg/L except as noted)				Average Values		
	Spring 1991 (High Flow)	Fall 1991 (Low Flow)	Range in 1992	Sept. 17, 1996	mg/L	lb/day	other units
Flow (cfs)	0.2	0.25	0.2 - 0.25	0.27 (field)	-	-	0.236 cfs
pH (std. unit)	6.95	6.76	6.2 (field) - 7.0	6.65 (field)	-	-	6.765 std. unit
Alkalinity (as CaCO <sub>3</sub> )	NA	NA	133	NA	133.0	-	-
Temperature (C)	13.1	11.6	NA	NA	-	-	12.35 C
Specific Conductance (umhos/	405	382	NA	408 (field)	-	-	398.3 umhos/cm
Total Dissolved Solids	284	240	NA	NA	262	333.8	-
Total Suspended Solids	20.85	18.6	NA	NA	19.7	25.1	-
Ca	NA	NA	55.1	NA	55.1	70.2	-
Mg	NA	NA	9.8	NA	9.80	12.5	-
Na	NA	NA	3.1	NA	3.10	3.95	-
K	NA	NA	2.2	NA	2.20	2.80	-
SO <sub>4</sub>	NA	NA	85.8	NA	85.8	109.3	-
Cl	NA	NA	1.1	NA	1.10	1.40	-
Mn	NA	NA	6.67	NA	6.67	8.50	-
Fe (Total) (Dissolved)	NA	NA	8.37	7.392 5.538	7.88	10.0	-
Zn (Total) (Dissolved)	15.8 17.15	13.8 14.1	13.6	16.449 16.087	14.9	19.0	-
Pb (Total) (Dissolved)	0.029 0.003	0.04 <0.0001	0.40 - <0.003	0.069 0.054	0.07	0.095	-
Cd (Total) (Dissolved)	0.0109 0.0091	0.0075 0.0075	0.0075 - 0.013	0.012 0.012	0.01	0.013	-
As (Total) (Dissolved)	NA	NA	<0.01	<0.035 <0.035	0.02	0.029	-

Note:

NA = Not Available

Sources:

- (a) McCulley, Frick & Gilman, Inc. 1992. Upstream Surface Water Sampling Program. Spring 1991 High Flow Event. August 8, 1991.
- (b) McCulley, Frick & Gilman, Inc. 1992. Upstream Surface Water Sampling Program. Fall 1991 Low Flow Event. March 24, 1992.
- (c) McCulley, Frick & Gilman, Inc. 1996. Draft Field/Laboratory Data Regarding Gem Portal Discharge, Sept. 1996.

### 3.0 SCOPE OF WORK

The following scope of work for performance of an EE/CA is based on the National Contingency Plan (NCP), 40 CFR § 300.415, and Guidance on Conducting Non-Time-Critical Removal Actions Under CERCLA (EPA, 1993). In summary, the project deliverables associated with this phase of the Gem Portal project are: 1) a sampling and analysis plan (SAP) and 2) the final EE/CA Report. A schedule for preparation of the EE/CA Report, other project submittals, and related activities is provided on Table 3-1.

#### 3.1 SAMPLING AND ANALYSIS

The initial project activities will consist of: 1) the collection of additional data to better characterize the flow rates and water quality of the Gem Portal drainage and 2) the construction and monitoring of a constructed wetland pilot project. The data from these activities will provide the basis for the development of a range of remedial alternatives for the Gem Portal and identification of a recommended remedial alternative, as prescribed by the EE/CA process.

A SAP has been prepared to describe the specific methods that will be used to collect the flow rate information and water quality data. The SAP includes a field sampling plan and a quality assurance/quality control plan. All chemical analyses conducted for this project will be implemented in a manner equivalent to that specified by EPA's Contract Laboratory Program guidance. A geotechnical sampling and testing program is discussed in the SAP. This program may be revised and implemented concurrently with development of the constructed wetland pilot project. Any revisions to the geotechnical sampling and testing program will be described in an addendum to the SAP.

#### 3.2 ENGINEERING EVALUATION / COST ANALYSIS

The draft EE/CA Report will be made available for public review. Upon conclusion of the public review period, EPA will compile all comments received, the draft EE/CA Report will be revised to address the comments, as appropriate, and EPA will prepare the Action Memorandum, which identifies and justifies the remedial action alternative selected for implementation.

**Table 3-1  
Gem Portal Drainage  
Project Schedule**

<b>Deliverable or Milestone</b>	<b>Schedule</b>
Draft Sampling and Analysis Plan (SAP) <sup>1</sup>	Previously submitted to EPA
Initiation of field sampling and data evaluation activities for Gem Portal flow	20 business days following the effective date of the Administrative Order on Consent (AOC) <sup>2</sup>
Culmination of field sampling and data evaluation activities for Gem Portal flow	One year following the initiation of sampling activities <sup>2</sup>
Draft Wetland Pilot Project (WPP) Work Plan	60 business days following effective date of AOC
Final Wetland Pilot Project Work Plan (note: Work Plan will include a monitoring plan and schedule for the Wetland Pilot Project)	20 business days following receipt of EPA comments on Draft Wetland Pilot Project Work Plan
Initiation of construction of Wetland Pilot Project	60 business days following approval of Final Work Plan <sup>2</sup>
Completion of construction of Wetland Pilot Project	180 days following initiation of construction <sup>2</sup>
Completion of Wetland Pilot Project	Three years following completion of construction of Wetland Pilot Project <sup>3</sup>
Draft EE/CA Report	40 business days following completion of Constructed Wetland Pilot Project
End of Public Comment Period for Draft EE/CA Report	30 days following public notice by the EPA regarding the opportunity to review and comment on the Draft EE/CA Report.
Final EE/CA Report <sup>1</sup>	30 business days following receipt of the Responsiveness Summary (responses prepared by EPA to comments obtained during the public comment period)
Action Memorandum (by EPA)	30 days following submittal of the Final EE/CA Report

**Notes:**

- 1 Project deliverable.
- 2 Schedule is subject to modification based on reasonable access and weather conditions.
- 3 A three-year treatability study for constructed wetland pilot projects is consistent with EPA's position at other sites (e.g., Silver Bow Creek/Butte Area Superfund Site, Butte Priority Soils Operable Unit, Montana).

### 3.2.1 Description of EE/CA Report

The EE/CA Report will include the following major components: 1) executive summary; 2) site characterization; 3) identification of remedial action scope, goals, and objectives; 4) identification and analysis of remedial action alternatives; 5) comparative analysis of remedial action alternatives; and 6) the recommended remedial action alternative. These components are discussed below.

#### 3.2.1.1 Executive Summary

The executive summary is intended to make the contents of the EE/CA Report more accessible to the public. It will provide a general overview of the EE/CA, including the perceived current or potential threat posed by the site conditions and an identification of the scope and objectives of the remedial action alternatives. The executive summary will also provide information on the recommended remedial action alternative.

#### 3.2.1.2 Site Characterization

This component will summarize the available data regarding the physical, demographic, and other characteristics of the Gem Portal and its vicinity, including data obtained during implementation of the SAP. Items that will be addressed in the site characterization component of the EE/CA include: 1) a site description; 2) any previous remedial actions; 3) source, nature, and extent of constituents of concern; 4) a summary of available analytical data (including those developed during implementation of the SAP); and 5) a streamlined risk evaluation.

#### 3.2.1.3 Identification of Remedial Action Scope, Goals, and Objectives

As noted in Section 1.2, the remedial action objective is to reduce the dispersal of pollutants from the Gem Portal into Canyon Creek in order to protect human health and the environment. A secondary objective is to allow for flexibility in the remedial approach such that flows from other sources in the

Canyon Creek drainage unrelated to the Gem Portal could also be addressed either concurrently with implementation of the selected remedial alternative or later as part of a more general Canyon Creek area remedial program. Through the EE/CA process, more specific remedial action objectives will be developed. Such subsequently developed remedial action objectives will be considered in the development of remedial action alternatives and the selection of the recommended alternative. This component of the EE/CA Report will also identify project deliverables necessary for implementation of the selected remedial alternative [e.g., remedial action work plan, final plan and specification package, construction progress reports, and construction completion reports].

#### 3.2.1.4 Identification and Analysis of Remedial Action Alternatives

Several remedial action alternatives will be developed based on the analysis of the nature and extent of constituents of concern and the remedial action objectives. Consistent with the guidance for removal actions (EPA, 1993), the development of remedial alternatives will not include an initial identification and screening of alternatives. Rather, only a few viable alternatives relevant to the EE/CA objectives will be identified and analyzed. Each of these alternatives will be described and then evaluated independently with respect to the primary criteria of effectiveness, implementability, and cost. Possible remedial action alternatives that may be considered during the EE/CA process are described in Section 4.

#### 3.2.1.5 Comparative Analysis of Remedial Action Alternatives

The comparative analysis of the remedial action alternatives will be conducted to evaluate the relative performance of each of the alternatives in relation to the criteria of effectiveness, implementability, and cost. The comparative analysis will identify the advantages and disadvantages of each alternative relative to one another so that key tradeoffs can be identified and taken into account during selection of the recommended remedial action alternative.

#### 3.2.1.6 Recommended Remedial Action Alternative

The EE/CA will identify the remedial action alternative that best satisfies the evaluation criteria and remedial action objectives based on the outcome of the comparative analysis. The recommended alternative will be clearly described to enhance the public's ability to participate in the selection process.

#### 3.2.1.7 Access Issues

The EE/CA will identify potential issues resulting from the fact that Asarco does not own land near the Gem Portal, and will propose solutions to these issues, as appropriate. As most of the remedial alternatives being assessed would require permanent structures to be constructed in the site vicinity, resolution of such issues will be critical to the project.

## 4.0 POTENTIAL REMEDIAL ACTION ALTERNATIVES

A suite of remedial action alternatives potentially applicable to the Gem Portal drainage will be developed during the EE/CA process and, through that process, one remedial action alternative will be recommended for implementation. It is anticipated that, upon full implementation of the recommended remedial action alternative, the Gem Portal drainage will adhere to numerical effluent limitations to be established during the EE/CA process. The ARARs could include the federal water quality criteria listed in Table 4-1. Alternatively, the effluent limitations may be based upon site-specific water quality criteria and information according to protected uses pertinent to Canyon Creek. Potential remedial action alternatives that may be considered during the EE/CA are described in the following sections.

### 4.1 NO ACTION

The no-action alternative would entail no additional remedial activity beyond that which has already occurred at the Gem Portal, with the possible exception of continued monitoring. The no-action alternative would provide a baseline against which other remedial action alternatives may be evaluated.

### 4.2 PORTAL PLUGGING

Portal plugging would involve excavation of the currently closed Gem Portal and abandonment of the existing pipeline extending from the portal to Canyon Creek. A concrete mine-adit plug would be constructed within the portal to prevent drainage from exiting the mine workings. This remedial action alternative, if implemented, could result in reduction or elimination of the Gem Portal drainage. Detailed hydrologic analyses may be needed to establish design parameters such as the maximum height to which the impounded waters may rise behind the adit plug. In addition, the potential for significant seepage to occur in the hillsides adjacent to and above the Gem Portal would need to be evaluated as would the potential need to plug other adits accessing mine workings drained by the Gem Portal.



**Table 4-1  
Federal Aquatic Life Criteria**

Constituent of Concern	Criterion ( $\mu\text{g/L}$ )
Arsenic	190
Cadmium	1.1*
Copper	12*
Chromium III	210*
Chromium VI	11*
Lead	3.2*
Mercury	0.012
Nickel	160*
Silver	4.1*
Zinc	110*

\* Criterion varies with total hardness. Values shown are for a total hardness of 100 mg/L  $\text{CaCO}_3$ .

#### 4.3 CONVENTIONAL TREATMENT USING pH ADJUSTMENT

Treatment of the Gem Portal drainage could be implemented using the conventional method of pH adjustment. By increasing the pH of the drainage to slightly basic levels, dissolved metals within the drainage (e.g., zinc) would precipitate to form a sludge. Such precipitation would result in lower metal concentrations within the drainage. A conventional pH adjustment treatment facility would consist of a reagent storage and rapid-mix feed system, a clarifier, and sludge handling and dewatering equipment. Conventional treatment using pH adjustment is a proven technology that should effectively treat the Gem Portal drainage. However, a disadvantage to treatment by pH adjustment is the significant volume of low-density sludge that would be produced. Such sludge is difficult to handle and would require disposal on an ongoing basis. Implementation of conventional treatment using pH adjustment may necessitate the conduct of a treatability study to establish appropriate reagent addition rates and to characterize sludge production characteristics.

#### 4.4 CONSTRUCTED WETLAND TREATMENT

Constructed wetland treatment systems have been demonstrated to remove dissolved metals from water. Wetland treatment emphasizes anaerobic sulfate reduction to provide reactive sulfides for precipitation of metals as metal monosulfides. Based on the available analytical data, the Gem Portal drainage contains adequate sulfate to support sulfate reduction in subsurface-flow, anaerobic wetlands. The drainage also contains moderate iron concentrations which could tend to plug a subsurface-flow constructed wetland. Therefore, pre-treatment for iron removal may be necessary prior to introducing the drainage into a constructed wetland treatment system. Such pre-treatment would produce sludge that would require disposal, though the volume of sludge so produced would be smaller than that produced by conventional treatment using pH adjustment. The constructed wetland treatment system itself would not be expected to produce sludges requiring disposal.

Unlike conventional treatment using pH adjustment, treatment using constructed wetlands is an innovative technology. As such, the efficacy of constructed wetlands to successfully treat the Gem Portal drainage will need to be evaluated using a pilot testing program. This program will entail the construction of a small wetland, possibly situated near the Gem Portal. A portion of the Gem Portal drainage would

be drawn off of the in-place 12-inch pipe and passed through the pilot-scale constructed wetland treatment system constructed near the portal. Alternatively, a pipeline may be constructed to convey all or a portion of the Gem Portal drainage to another pilot wetland location within the project area, such as the Star tailings ponds or the Woodland Park flats. Regular monitoring of this pilot system would be used to assess system performance. Key information to be obtained from the pilot testing program would include system performance during cold-weather conditions and overall effectiveness. Planning and construction of the constructed wetland pilot project will begin following the effective date of the AOC and depending upon weather conditions at Canyon Creek. The data from the constructed wetland pilot project will be included in the EE/CA Report.

#### 4.5 IN-SITU BIOLOGICAL TREATMENT

It may be possible to treat waters draining from the Gem Portal by stimulating microbial activity within the underground mine workings. Such in-situ treatment would create conditions conducive to the removal of metals. Inoculation of the mine workings would be implemented by introducing an organic carbon source in liquid form through an opening accessing the upper portions of the mine workings (e.g., another adit, a shaft, or a stope that is open at the surface). Safe access to the mine workings for this purpose could involve extensive adit or shaft rehabilitation.

In-situ biological treatment is also an innovative technology and a pilot testing program would be needed to assess its efficacy. Again, a portion of the Gem Portal drainage could be drawn off of the buried 12-inch pipeline, with the pilot test carried out adjacent to the Gem Portal in a tank or small lined ponds, or a pipeline could be constructed to facilitate pilot testing in another portion of the project area. Regular monitoring of the pilot test would be used to establish dosage rates and to assess treatment performance. It is proposed not to proceed with this pilot project until the results from the constructed wetland pilot project are known.

## 5.0 REFERENCES

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- National Oceanic and Atmospheric Administration (NOAA), 1982. Evaporation Atlas for the Contiguous 48 United States, NOAA Technical Report NWS33, Washington, D.C.
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